COMPLETE LISTING OF CLAIMS, INCORPORATING AMENDMENTS IN RESPONSE TO OFFICE ACTION DATED 03/03/2005 FOR SERIAL NO. 10/677,238

The claims should be amended as follows:

1. (Original) Apparatus for measuring the concentration and/or particle size distribution of a slurry, said apparatus comprising:

a sealed container holding the slurry for applying elevated heat and pressure to the slurry, wherein the sealed container has an inner and outer wall;

first and second transducers for respectively transmitting and receiving ultrasonic signals; and

a first isolating coupler connecting said first transducer to a first portion of a lateral wall of said container and a second isolating coupler connecting said second transducer to a second portion of the lateral wall of said container for respectively transmitting an ultrasonic signal emitted by said first transducer through the slurry and transmitting an ultrasonic signal exiting said container to said second transducer, wherein the ultrasonic signal undergoes changes in transiting the slurry, with said changes providing a measure of the slurry's concentration and/or particle size distribution, and wherein said first and second couplers respectively isolate said first and second transducers from the heat and pressure in said sealed container.

2. (Original) The apparatus of claim 1 further comprising a source of coolant connected to said first and second couplers for maintaining said first and second transducers at an ambient temperature.

3. (Original) The apparatus of claim 2 wherein each of said first and second couplers is a generally closed housing disposed about said first and second transducers, respectively.

4. (Original) The apparatus of claim 3 wherein each of said housings is in

the general form of a disc having a peripheral lateral wall connected to said source of coolant and first and second opposed end walls respectively coupled to said sealed container and to a respective transducer.

5. (Original) The apparatus of claim 3 wherein each of said housings is in the general form of a disc having a generally circular lateral wall and first and second opposed end walls respectively coupled to said sealed container and to a respective transducer, and wherein said second opposed end wall is further connected to said source of coolant.

6. (Previously Presented) An apparatus for measuring the concentration and/or particle size distribution of a slurry, said apparatus comprising:

a sealed container holding the slurry for applying elevated heat and pressure to the slurry;

first and second transducers for respectively transmitting and receiving ultrasonic signals;

a first isolating coupler connecting said first transducer to a first portion of a lateral wall of said container and a second isolating coupler connecting said second transducer to a second portion of the lateral wall of said container for respectively transmitting an ultrasonic signal emitted by said first transducer through the slurry and transmitting an ultrasonic signal exiting said container to said second transducer, wherein the ultrasonic signal undergoes changes in transiting the slurry, with said changes providing a measure of the slurry's concentration and/or particle size distribution, and wherein said first and second couplers respectively isolate said first and second transducers from the heat and pressure in said sealed container;

a source of coolant connected to said first and second couplers for maintaining said first and second transducers at an ambient temperature, wherein each of said first and second couplers is a generally closed housing disposed about said first and second transducers, respectively; and

wherein each of said first and second couplers includes a respective adapter for connecting a respective closed housing to said sealed container, wherein each adapter comprises an inner coupling rod and an outer bushing concentrically disposed about said rod in a spaced manner and connected to said rod.

7. (Original) The apparatus of claim 6 wherein each of said inner coupling rods has a first end disposed within said sealed container and a second opposed end disposed in a coupler and in contact with an associated transducer, and wherein a first coupling rod transmits an ultrasonic signal emitted by said first transducer into said container and a second coupling rod transmits an ultrasonic signal having transited the slurry to said second transducer.

8. (Original) The apparatus of claim 7 wherein the first and second ends of each of said coupling rods are parallel.

9. (Original) The apparatus of claim 6 wherein each of said coupling rods and bushings is comprised of stainless steel.

10. (Original) The apparatus of claim 6 wherein adjacent ends of said coupling rod and said bushing are connected together by spot weldments, and wherein a closed annular gap is disposed between said coupling rod and said bushing for limiting thermal transmission and ultrasonic signal interference between said sealed container and a transducer.

11. (Previously Presented) The apparatus of claim 6 wherein a distal end of said coupling rod includes a first threaded portion coupled to said closed housing, and wherein a proximal end of said bushing includes a second threaded portion coupled to the lateral wall of said sealed container.

12. (Previously Presented) The apparatus of claim 11 wherein said second threaded portion is tapered.

13. (Original) The apparatus of claim 12 wherein each of said first and second transducers includes a respective third threaded portion, and wherein each of said third threaded portions is coupled to a respective one of said closed housings.

14. (Original) The apparatus of claim 13 wherein each of said closed housings includes a respective threaded slot extending between the first and second opposed end walls of said closed housing, and wherein a second threaded portion of a bushing and a third threaded portion of a transducer are inserted in and engage a threaded slot in each of said closed housings.

15. (Currently Amended) ~~The~~ An apparatus ~~of claim 1~~ for measuring the concentration and/or particle size distribution of a slurry, said apparatus comprising:

a sealed container holding the slurry for applying elevated heat and pressure to the slurry, wherein the sealed container has an inner and outer wall;

first and second transducers for respectively transmitting and receiving ultrasonic signals; and

a first isolating coupler connecting said first transducer to a first portion of a lateral wall of said container and a second isolating coupler connecting said second transducer to a second portion of the lateral wall of said container for respectively transmitting an ultrasonic signal emitted by said first transducer through the slurry and transmitting an ultrasonic signal exiting said container to said second transducer, wherein the ultrasonic signal undergoes changes in transiting the slurry, with said changes providing a measure of the slurry's concentration and/or particle size distribution, and wherein said first and second couplers respectively isolate said first and second transducers from the heat and pressure in said sealed container; and

wherein each of said couplers includes a respective thermowell disposed adjacent a respective transducer for receiving a thermocouple for determining an operating temperature of the transducer.

16. (Original) Apparatus for directing an ultrasonic signal through a slurry or receiving an ultrasonic signal transmitted through a slurry for determining characteristics of the slurry, said apparatus comprising:

an autoclave reactor containing the slurry and maintaining the slurry at elevated temperatures and pressures;

a transducer for directing an ultrasonic signal into said autoclave reactor and through the slurry or for receiving an ultrasonic signal exiting said autoclave reactor after transiting the slurry; and

a coupler for connecting said transducer to said autoclave reactor and isolating said transducer from the elevated temperatures and pressures within said autoclave reactor, said coupler including means for circulating a coolant about said transducer, an acoustic member in contact with the transducer for transmitting an ultrasonic signal emitted by said transducer into said autoclave reactor or an ultrasonic signal exiting said autoclave reactor after transiting the slurry to said transducer, a connector attaching said acoustic member to said autoclave reactor for transmitting an ultrasonic signal into said autoclave reactor or receiving an ultrasonic signal exiting said autoclave reactor, wherein said connector and acoustic member are thermally isolated from one another for allowing said transducer to operate at ambient temperature and pressure.

17. (Previously Presented) The apparatus of claim 1 further comprising a series of vertical baffles positioned along the inner wall of the sealed container.

18. (Previously Presented) The apparatus of claim 1 further comprising a stirrer having one or more propeller blades extending into the sealed container.\

19. (Previously Presented) The apparatus of claim 1 further comprising a gas line disposed in the sealed container to discharge gas bubbles in the slurry.